

## Radically lowering the cost of a Trendmaster® 2000 System Installation using flexiTIM™

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**R**ecent studies show that installation costs for balance-of-plant, online condition monitoring equipment can exceed hardware costs by a factor of four. Understandably, many customers say installation cost is the primary reason **not** to fund capital projects aimed at further reducing balance-of-plant maintenance expenditures, even though those expenditures account for nearly 15% of a plant's annual maintenance budget. In an effort to reduce the installation cost (Figure 1), Bently Nevada has developed the flexiTIM™ System, a dual channel Transducer Interface Module (TIM) exclusively designed for use with the Trendmaster 2000 System.

In most corporations, approval of capital projects depends on the expected Return On Investment (ROI). The "Return" from the Trendmaster 2000 online system is primarily generated through its faster, automated data acquisition capabilities. Many customers have realized short payback periods and substantial returns from the Trendmaster 2000 System through increased Mean Time Between Repairs (MTBR), reduced machinery repair expenditures, and fewer catastrophic failures.

Similarly, the "Investment" of any capital project can be classified



as capital equipment cost, training cost, personnel cost, and installation cost. The flexiTIM was designed to reduce the largest component of a company's investment in online condition monitoring equipment for balance-of-plant machinery...the installation cost.

The flexiTIM lowers installation cost by 25% in four ways:

1. The flexiTIM eliminates the need for mounting separate, weatherproof housings by mounting directly to rigid conduit.
2. A new, industrial-grade cable connects the transducer and the flexiTIM, and eliminates the need for conduit runs directly to the machine.
3. Quick plug connectors on the cover of the flexiTIM, speed installation and removal of the transducer cable during machinery maintenance or replacement. See Figure 2.
4. The flexiTIM serves as the standard hardware platform for vibration, pressure, & tem-

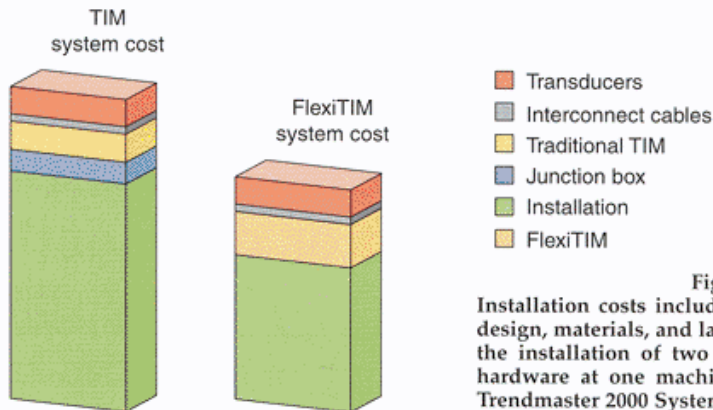
perature inputs into the Trendmaster 2000, which simplifies initial installation and expansion.

Whether you are an existing Trendmaster 2000 System customer who wants to expand an existing system, or a potential customer who wants to justify a future project, the flexiTIM and Trendmaster 2000 System can best address your needs. Contact your nearest Bently Nevada sales representative to learn more about the flexiTIM and Trendmaster 2000 solution.

### Trendmaster 2000 and Asset Management

The concept, Asset Management, is simple. Business decisions are based on two variables: the revenue created through production and process optimization, and the associated maintenance expenses created by machinery stress when operating at those levels. To make an informed business decision, the two variables must be associated and evaluated.

Bently Nevada supports this concept by providing machine condition feedback in an expanded Trendmaster 2000 System. A temperature flexiTIM designed to operate with RTDs or Thermocouples will soon complement the vibration flexiTIM. Several Trendmaster 2000 customers have produced significant machine saves by simultaneously monitoring centrifugal pump radial vibration and thrust bearing



**Figure 1.**  
Installation costs include mechanical and electrical design, materials, and labor cost. They are based on the installation of two transducers and associated hardware at one machine location for an existing Trendmaster 2000 System.

temperature. This combined approach has been so successful that many end-users now specify this monitoring strategy on all API centrifugal pumps in their plants.

In addition to the temperature flexiTIM, Bently Nevada will produce a pressure flexiTIM monitoring strategy to detect seal problems before failure occurs. The Trendmaster 2000 System with pressure and temperature flexiTims, will help you reduce the catastrophic machine failures and fugitive emission releases associated with failed mechanical seals. This is one of the largest maintenance expenditures associated with general-purpose machinery.

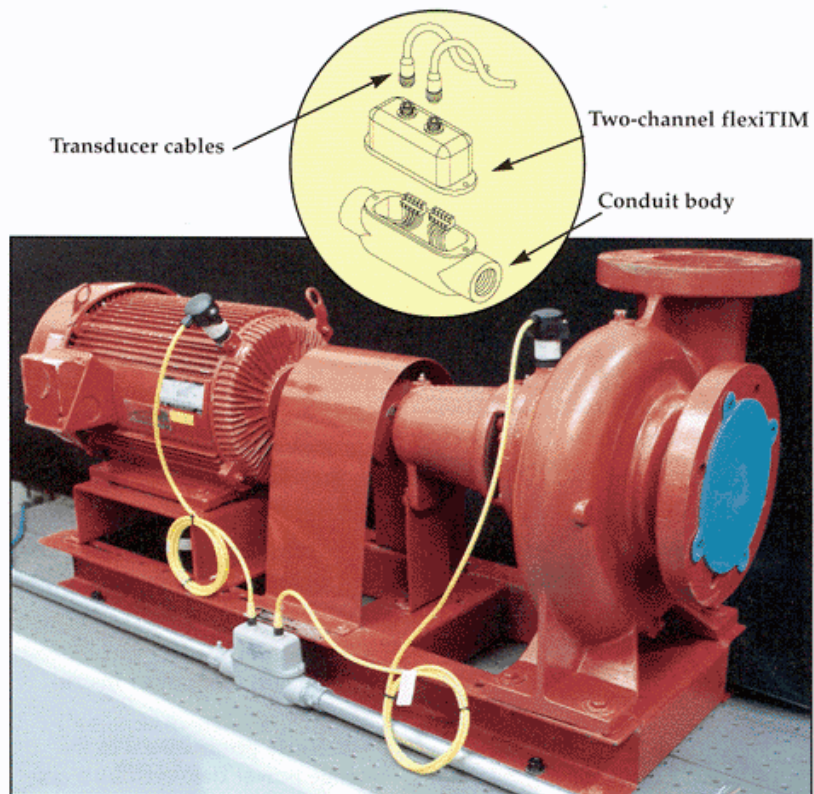
An Asset Management solution is now required that extends beyond the capabilities of a portable data collector system, and the Trendmaster 2000 system is the most reliable and cost-effective answer to your needs.

#### **Trendmaster 2000 case histories**

Several case histories have been printed in past Orbits. If you would like free copies, check the appropriate box on the Reader Service Card or request them through our website - [www.bently.com](http://www.bently.com)

- Largest U.S. municipal utility emphasizes online systems in long-term maintenance strategy

- Immediate payback for Trendmaster 2000 System: Virgin Island Refinery has seventeen saves in first year
- TPM program saves cement plant \$1,500,000 in first year
- Operators prevent shaft cracks with online information - (petrochemical plant)
- Catastrophic failure of a cooling tower fan - (power station)



**Figure 2.** Typical pump installation, showing flexiTIM and transducer locations.